

WHAT IS CLAIMED IS:

1. An information acquisition apparatus
comprising:

a stage for placing a specimen;

5 a temperature regulation means for regulating
the temperature of said specimen;

an exposure means for exposing a surface of
said specimen of which surface information is
desired; and

10 an information acquisition means for acquiring
the information relating to the surface exposed by
said exposure means.

2. An information acquisition apparatus
15 according to claim 1, wherein the exposure by said
exposure means and the acquisition of the information
by said information acquisition means are executed in
a state where said specimen is regulated at a preset
temperature by said temperature regulation means.

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3. An information acquisition apparatus
according to claim 1, wherein said temperature
regulation means is provided with a cooling means for
cooling said specimen to a temperature lower than the
25 room temperature.

4. An information acquisition apparatus

according to claim 1, wherein said stage, said exposure means and said information acquisition means are provided in a chamber of which atmosphere is controllable, and the information acquisition apparatus further comprises a trap means for
5 capturing gas remaining in said chamber.

5. A cross section evaluating apparatus comprising:

10 a stage for placing a specimen;
a temperature regulation means for regulating the temperature of said specimen;
an ion beam generation means for irradiating said specimen with an ion beam thereby cutting out a
15 cross section or working said specimen;
an electron beam generation means for irradiating said specimen with an electron beam; and
a detection means for detecting an emission signal emitted from said specimen in response to the
20 irradiation with said ion beam or the irradiation with said electron beam, to acquire information from said detection means.

6. A cross section evaluating apparatus
25 according to claim 5, wherein said temperature regulation means is provided with a cooling means for cooling said specimen to a temperature lower than the

room temperature.

7. A cross section evaluating apparatus according to claim 5, wherein said stage, said ion
5 beam generation means, said electron beam generation means and said detection means are provided in a chamber of which atmosphere is controllable, and the cross section evaluating apparatus further comprises a trap means for capturing gas remaining in said
10 chamber.

8. A cross section evaluating apparatus according to claim 5, further comprising an information acquisition means for irradiating a
15 predetermined portion of said specimen with said ion beam to cut out a cross section or work the specimen, scanning the surface of said predetermined portion or said cut-out cross section with said ion beam or said electron beam, and acquiring an image information
20 relating to the surface of said predetermined portion or said cut-out cross section based on emission signals from plural point detected by said detection means in synchronization with said scanning.

25 9. A cross section evaluating apparatus according to claim 8, wherein said temperature regulation means is comprised of:

a specimen stage having a temperature varying mechanism in a portion where said specimen is fixed, and rendering the fixed specimen capable of moving and rotating in predetermined directions;

5 a first temperature detection means mounted in a part of said temperature varying mechanism to detect the temperature of the vicinity of the specimen fixed to said temperature varying mechanism; and

10 a temperature control means for regulating the temperature in said temperature varying mechanism based on the temperature detected by said first temperature detection means to keep the temperature of said specimen at a preset temperature.

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10. A cross section evaluating apparatus according to claim 9, wherein a lateral face of the specimen fixed on said temperature varying mechanism is irradiated with the ion beam.

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11. A cross section evaluating apparatus according to claim 9, wherein said temperature regulation means is further comprised of a second temperature detection means for directly detecting
25 the temperature of the specimen and a display means for displaying the temperature detected by said second temperature detection means.

12. A cross section evaluating apparatus according to claim 11, wherein said temperature control means regulates the temperature in said temperature varying mechanism based on temperatures
5 detected by the first and second temperature detection means.

13. A cross section evaluating apparatus according to any of claims 5 to 10, wherein said
10 emission signal is a secondary electron and/or a characteristic X-ray.

14. A cross section evaluating apparatus according to claim 13, wherein said emission signal
15 is a secondary electron or a characteristic X-ray.

15. A cross section evaluating apparatus according to any of claims 5 to 10, wherein said detection means is comprised of a first detector for
20 detecting a secondary electron and a second detector for detecting a characteristic X-ray.

16. A cross section evaluating method comprising the steps of:
25 regulating the temperature of a specimen;
irradiating a predetermined portion of said specimen with an ion beam to cut out a cross section;

and

scanning said cut-out cross section with an
electron beam and acquiring an image relating to said
cross section from an emission signal emitted from
5 plural points in synchronization with said scanning.

17. A cross section evaluating method according
to claim 16, wherein said emission signal is a
secondary electron and/or a characteristic X-ray.
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18. An information acquisition apparatus
according to claim 4, wherein said emission signal is
a secondary electron and/or a characteristic X-ray.

15 19. An information acquisition apparatus
according to claim 18, wherein said emission signal
is a secondary electron or a characteristic X-ray.

20 20. An information acquisition apparatus
comprising:
a stage for placing a specimen;
a temperature regulation means for regulating
the temperature of said specimen;
an ion beam generation means for irradiating
25 said specimen with an ion beam thereby cutting out a
cross section or working said specimen;
an electron beam generation means for

irradiating said specimen with an electron beam; and
a detection means for detecting an emission
signal emitted from said specimen in response to the
irradiation with said ion beam or the irradiation
5 with said electron beam, to acquire information from
said detection means.

21. An information acquisition apparatus
according to claim 20, wherein said stage, said ion
10 beam generation means, said electron beam generation
means and said detection means are provided in a
chamber of which atmosphere is controllable, and the
cross section evaluating apparatus further comprises
a trap means for capturing gas remaining in said
15 chamber.

22. An information acquisition apparatus
according to claim 1, said information acquisition
apparatus further comprising a sealing means for
20 sealing said stage to transfer the same in the
outside air-tight state.

23. A cross section working apparatus for
working a cross section of a specimen, comprising:
25 a stage for placing the specimen;
a temperature regulation means for regulating
the temperature of the specimen;

a beam generation means for irradiating the specimen with a beam to execute a working of the specimen; and

5 a sealing means for sealingly accommodating the specimen and the stage before conveying the stage and the specimen prior to working.

24. A cross section evaluating method, comprising:

10 a first step of regulating the temperature of a specimen,

a second step of irradiating a beam onto the specimen and cutting out a cross section;

15 a third step of sealing the specimen which is temperature-regulated;

a fourth step of conveying the sealed specimen to another apparatus; and

a fifth step of evaluating the conveyed specimen by using another apparatus.

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25. An information acquisition apparatus comprising:

a stage for placing a specimen;

25 a temperature regulation means for regulating the temperature of the specimen; and

an information acquisition means for acquiring the information relating to the surface of the

specimen,

wherein said temperature regulation means operates to regulate the temperature such that the temperature of the specimen is regulated at the predetermined
5 temperature for acquiring the accurate information.